19 – Geotextile

Geotextile is a tough, nonwoven, porous 15-foot-wide roll of industrial polymer fabric. It is used to underlay gravel on soft sections of haul roads that are likely to rut excessively, and at logging road entrances where mud transfer to a public road may be a problem. The geotextile allows water on the road surface to flow through the gravel and fabric and into the ground but keeps the soil from working up through the fabric and into the gravel road surface as trafficking occurs. This dramatically reduces rutting and mud transfer and also decreases the amount of crushed rock necessary to keep the haul road serviceable.

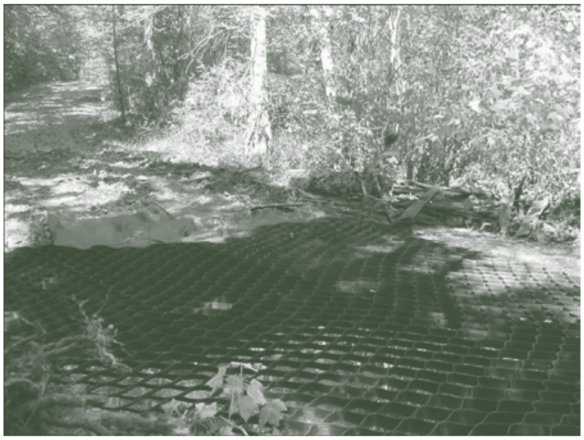
Several types of geotextile are available in rolls ranging from 240 to 900 linear feet, depending on material composition and thickness. For maximum effectiveness, geotextile should be installed on critical haul road sections before trafficking begins or rutting occurs. Clear the road subgrade of any large stones or other sharp objects that could puncture the fabric, then carefully roll out the geotextile. Anchor it along the edges with rocks or soil, then dump a load of gravel along the leading edge and carefully spread it over the fabric with a bulldozer. Repeat this process until the geotextile is covered with the desired depth of gravel (typically 4 to 6 inches). Vehicles should not drive directly on the geotextile as the gravel is being spread.

Careful haul road planning, along with the proper use of geotextile to underlay crushed rock where appropriate, decreases haul road failure and equipment damage, eliminates problems with mud on public roads, and increases logging production and profitability.

20 – Geo Web® Improved Ford

Definition

A streambed modification to improve or "harden" a streambottom in a sandy-bottomed stream to provide support for logging trucks with minimal streambottom disturbance.



Purpose

To provide a permanent type of improved "ford" that will support the weight of a fully loaded logging truck without restriction of stream flow.

Conditions Where Practice Applies

- On stream crossings where the drainage area above the crossing is less than 5 square miles and where a design plan has been submitted to the Virginia Department of Forestry and has been approved by the Water Resources Team. This type of crossing is to provide a hardened stream bottom for a permanently improved ford in streams that are sandy or in silt bottomed streams.

Planning Considerations

Where a ford is to be considered as the least intrusive type of crossing to the stream with regard to the stream's stability. It should be considered an option when a bridge or culvert installation has been ruled out due to culvert sizes or bridge spans being too great to allow for economical and safe transport. The approaches to the ford should be stabilized by the installation of geotextile road fabric cover with six inches of VDOT #3 gravel.

Geo Web® is a polymer fabric 8 feet wide that is designed in a honeycomb pattern of depths of 4, 6 and 8 inches. For load support options, only the 6 inch and 8 inch material should be considered. When the fabric is pulled out, the formation of “cells” becomes evident. The Geo Web® should have an underlayment of geotextile road cloth to support the crushed gravel that will be backfilled into each cell, thus providing the support for the truck traffic. The greater the depth of the cell, the more load capacity the installation can handle. The stream should be crossed at a right angle to the stream flow.

Construction Recommendations

The streambed should be excavated to the depth of the Geo Web® being used. It is recommended for tractor and trailer traffic that a 6 inch or 8 inch Geo Web® is used. The streambed should be lined with geotextile road fabric to the width of the desired ford. The geotextile should be installed at least 50 feet on either side of the ford on the ford approaches.

The Geo Web® fabric should be stretched across the stream bottom and backfilled with VDOT #5 crushed gravel or limestone. The depth of the installation should not exceed the depth of the original streambottom, and no restriction of stream flow should occur.

Geo Web® of at least 6 inches in depth may be considered on stream approaches of 50 feet on either side of the ford if a soft soil condition exists. This will insure stability of the approaches. All bare soil areas should be graded and vegetated according to specifications in Appendix D.

Maintenance

The crossing should be checked periodically for maintenance and gravel added if necessary. The approaches to the crossing should be maintained with clean stone to prevent the tracking of sediment on truck tires into the stream channel. The crossing should not be used during periods of extremely high water (conditions where bankfull flow is reached). Safety considerations should be of paramount importance.

21 – Logging Entrance

Definition

The entrance from the state highway onto the haul road that accesses the harvesting operation.

Purpose

To allow for the ingress and egress of logging trucks in a safe and efficient manner.

Conditions Where Practice Applies

- On all haul road entrances where they intersect with a state highway.

Planning Considerations

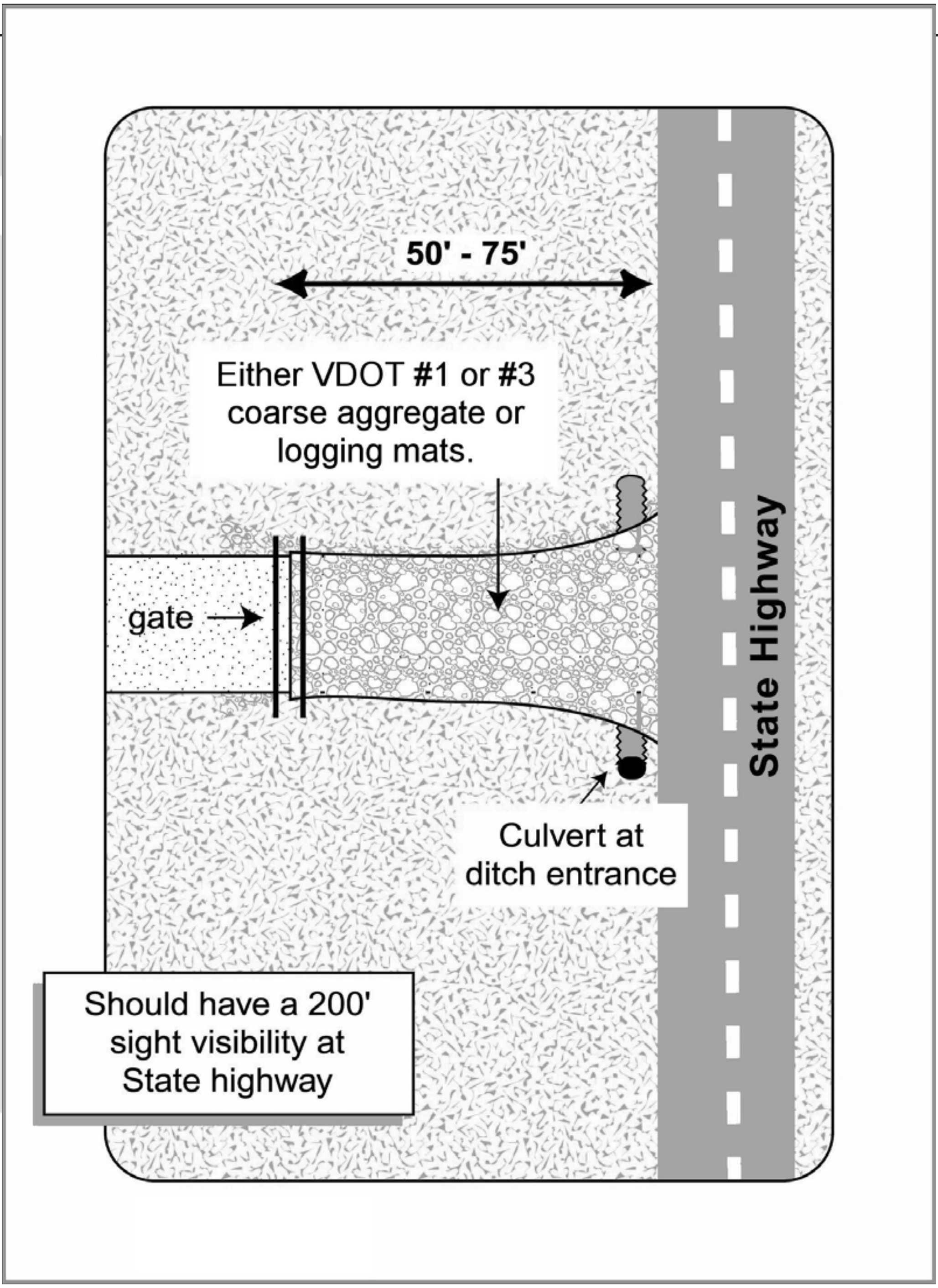
The entrance should be located in an area of good visibility to oncoming traffic. A minimum safe distance of 200 feet of visibility in both directions should be used as a guide for highway entrance. Consult with the Virginia Department of Transportation for areas of difficult access and/or limited visibility.

Entrance should be wide enough to accommodate the turning radius of the truck traffic anticipated.

A cross-drainage culvert for the highway ditchline should be installed according to Virginia Department of Transportation guidelines.

Clean, crushed gravel (VDOT #1 or #3) should be maintained at all logging road entrances to state highways. No mud should be tracked onto the state highway. The use of geotextile road fabric under the rock will save money for rock by providing a stabile base for the rock. The use of wooden logging mats will also save money on rock expense.

Access to the logging site should be controlled by use of a clearly marked gate or cable.


50' - 75'
Either VDOT #1 or #3 coarse aggregate or logging mats.
gate
State Highway
Culvert at ditch entrance
Should have a 200' sight visibility at State highway